Claims

1. A process for the production of acetic acid by carbonylating methanol and/or a reactive derivative thereof with carbon monoxide in at least one carbonylation reaction zone containing a liquid reaction composition comprising an iridium carbonylation catalyst, methyl iodide co-catalyst, a finite concentration of water, acetic acid, methyl acetate, at least one promoter selected from ruthenium, osmium and rhenium and at least one catalyst system stabiliser selected from indium, cadmium, mercury, gallium and zinc and wherein the molar ratio of iridium : promoter : stabiliser in the liquid reaction composition is maintained in the range 1: (>2 to 15) : (0.25 to 12).

2. A process according to claim 1 wherein the molar ratio of iridium : promoter : stabiliser in the liquid reaction composition is maintained in the range 1: (>2 to 10) : (1 to 12).

3. A process according to claim 1 wherein the molar ratio of iridium : promoter : stabiliser in the liquid reaction composition is maintained in the range 1: (3 to 10) : (1 to 10).

4. A process according to any one of claims 1 to 3 wherein the concentration of catalyst system stabiliser in the liquid reaction composition is less than 9000 ppm.

5. A process according to any one of claims 1 to 4 wherein the catalyst system stabiliser is selected from iodides or acetates of indium, cadmium, mercury, gallium and zinc.

6. A process according to any one of claims 1 to 5 wherein the promoter is ruthenium.

7. A process according to any one of claims 1 to 6 wherein the concentration of promoter in the liquid reaction composition is less than 8000 ppm.

8. A process according to any one of claims 1 to 7 wherein the concentration of water in the liquid reaction composition is in the range 0.1 to 20 wt%.

9. A process according to any one of claims 1 to 8 wherein the carbonylation is carried out in two reaction zones.

10. Use of at least one of indium, cadmium, mercury, gallium and zinc as a catalyst system stabiliser in a process for the production of acetic acid which process comprises carbonylating methanol and/or a reactive derivative thereof with carbon monoxide in at least one carbonylation reaction zone containing a liquid reaction composition comprising an iridium carbonylation catalyst, methyl iodide co-catalyst, a finite concentration of water, acetic acid, methyl acetate, at least one promoter selected from ruthenium, osmium and rhenium; and at least one catalyst system stabilizer selected from indium, cadmium, mercury, gallium and zinc and wherein the molar ratio of iridium : promoter : stabiliser in the liquid reaction composition is maintained in the range 1: (>2 to 15) : (0.25 to 12).